of the operational overheads applicable to the maintenance of an ongoing business. Furthermore, as set forth in the footnote to paragraph 24 of the Commission's memorandum opinion and order adopted May 22, 1968, there are differences between the manner in which the cable carriers compute their costs and the manner in which Comsat, a relatively new enterprise, has thus far felt compelled to compute its costs. There are also differences resulting from the fact that when the carriers lease circuits from Comsat they must pay it a sum sufficient to cover not only operation and maintenance of the earth station and satellites, as well as depreciation on these facilities, but also a proportionate share of total corporate overheads and a return on Comsat's investment. Before making a service available to the public, the carriers must add on a sum sufficient to cover their own corporate overheads; thus, cable costs include but a single corporate overhead, whereas satellite facilities include two corporate overheads.

7. I agree with Comsat that under these circumstances direct and explicit comparisons are difficult, if not impossible. However, I see nothing in their pleading or upon further review of data filed in this matter which would require substantial modification of my original concurring statement, aside from a specific note that the carrier revenue requirements to which I referred were based on average investment over the life of the facility whereas the Comsat data were based on year-by-year requirements reflecting then-undepreciated investment. The Comsat data also indicates higher per circuit revenue requirements because their facilities at the time were only partly filled, whereas the first four TAT cables were substantially filled. Finally, because of the need to serve many points, and the manner in which units of utilization must be assigned under present operating modes, the satellite may not be expected to achieve a fill of more than about 80 percent of designed capacity, whereas the cable can and does achieve 100 percent fill.

8. In commenting on my comparisons between the Intelsat satellites and TAT–5, Comsat alleges that they were based upon dissimilar data. This is true, but the differences result from the inherent nature of the two media. Satellite facility costs are not segregated for each generation as cable costs are, because as each satellite generation is filled a new and larger satellite generation is put into service and all traffic, or nearly all traffic, is transferred to the newer and larger satellite. The older generation, although it may still be physically capable of handling traffic, ceases to be revenue producing unless other uses can be found for it in other regions of the world. This course of action is followed in the satellite technology to obviate the need for building additional expensive earth station antennas or, if antennas are available, to obviate the need for expensive cross hauling. On the other hand, when cables are filled they are supplemented, rather than replaced, by succeeding generations and thus each generation continues to be revenue producing.

9. Secondly, Comsat alleges that the stated TAT–5 revenue requirement consists only of direct costs, whereas Comsat's stated revenue requirement included both direct and indirect costs. This, again, is true, but here also the difference results from the fact that use of cable facilities requires, as noted above, satisfaction of a single corporate overhead, whereas Comsat in fixing its rates to the carriers must necessarily include its overheads and the carriers, in turn, in fixing charges to the public, must include the total sums paid to Comsat plus an amount sufficient to pay for their own overheads. The appropriate comparison, therefore, is between the cost of cable circuits without corporate overheads as against the price paid for satellite circuits which does include the Comsat overheads. In each case the carrier adds an appropriate factor per circuit for recovery of its own overheads. Again, there is a difference in the costs included but a uniformity of treatment for the purposes of comparison.

10. Finally, Comsat points out that TAT–5 costs were derived by using average revenue requirements for a 20-plus-year period, the estimated life of the cable, whereas annual satellite circuit costs related only to shorter periods ending in 1973. Comsat is right in this and I recognized this fact in my conclusions by making reference to the period of the next 5 to 7 years. I further pointed out in several places that we hope and expect to realize the economies to which Comsat refers from later generations satellites. Furthermore, the Commission itself, in paragraph 24 in its memorandum opinion, expressed its confidence that as satellite technology moves to more sophisticated satellites it will provide increasingly more economical facilities in future years, with corresponding large scale reductions in charges for service to the public.